

WE CLAIM:

1. A drive head assembly for use to fluid sealingly rotate a rod extending down a well, comprising:
 - a rotatable sleeve adapted to concentrically receive a portion of said rod therethrough;
 - means for drivingly connecting said sleeve to the rod; and
 - a prime mover drivingly connected to said sleeve for rotation thereof.
2. The drive head assembly of claim 1 further comprising a tubular standpipe concentrically mounted within said sleeve in annular spaced relation defining a first annular fluid passageway between said standpipe and said sleeve and a second annular fluid passageway between said standpipe and said rod, said second passageway being in fluid communication with wellhead pressure in said well during normal operations.
3. The drive head assembly of claim 2 further comprising seal means between said first and second passageways permitting the maintenance of a fluid pressure differential therebetween.
4. The drive head assembly of claim 3 including means for maintaining the fluid pressure in said first passageway in excess of wellhead pressure in said second passageway.
5. The drive head assembly of claim 4 wherein said seal means are disposed in said first passageway.
6. The drive head assembly of claim 5 wherein said seal means are compressively loaded in said first passageway for enhanced sealing.
7. The drive head assembly of claim 4 wherein said means for maintaining the fluid pressure in said first passageway comprise a fluid pump and a fluid conduit for the delivery of pressurized fluid from said pump to said first passageway.
8. The drive head assembly of claim 7 wherein said pump is actuatable by said prime mover.

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9. The drive head assembly of **claim 8** wherein said means for drivingly connecting said sleeve to the rod comprise a cap member releasably and tightenably connectable to an upper end of said sleeve for rotation therewith, said cap member having a bore for the passage of the rod therethrough, and a rod clamp for transmitting rotational torque from said cap member to said rod.
10. The drive head assembly of **claim 9** further comprising static seal means disposed in sealing contact around said rod adjacent said upper end of said sleeve.
11. The drive head assembly of **claim 10** wherein said static seal means comprise one or more vertically stacked sealing members and a rigid seal carrier for supporting said seal members about the rod, said seal carrier sealingly occupying the annular space between said seal members and the inner surface of said upper end of said sleeve.
12. The drive head assembly of **claim 11** wherein said seal means and said static seal means operably function together as a stuffing box for said rod.
13. The drive head assembly of **claim 12** wherein removal of said cap member from said sleeve enables said stuffing box to be serviced without removing said drive head assembly from the well.
14. The drive head assembly of **claim 13** wherein tightening said cap member on said sleeve compressively loads said stuffing box for fluid sealing purposes.
15. The stuffing box of **claim 13** including means to bias said seal means towards said seal carrier and, in turn, said seal carrier towards said cap member.
16. The drive head assembly of **claim 15** wherein said means to bias press said seal means against said seal carrier and, in turn, said seal carrier against said cap member when the fluid pressure in said first passageway exceeds wellhead pressure in said second passageway.
17. The drive head assembly of **claim 13** including a ring member disposed beneath said seal means to support said seal means in said first passageway.

18. The drive head assembly of claim 17 including means to bias said seal means against said ring member and to bias said seal carrier against said cap member.

19. The drive head assembly of claim 15 wherein said means to bias is a spring.

20. The drive head assembly of claim 19 wherein said resilient member is a spring.

21. The drive head assembly of claim 15 further including a first upper and a second lower spaced apart bearing hubs, each having a bore formed axially therethrough for rotatably supporting said sleeve therein.

22. The drive head assembly of claim 21 wherein a lower end of said standpipe is received into said bore in said lower bearing hub for a fluid tight connection between said standpipe's outer surface and said bore, the interior of said standpipe remaining exposed to wellhead pressure.

23. The drive head assembly of claim 22 further including a labyrinth seal for fluid sealing between said first fluid passageway and said lower bearing hub.

24. The drive head assembly of claim 23 wherein said labyrinth seal is sealingly biased against an inner surface of said first fluid passageway and a contiguous surface of said lower bearing hub.

25. The drive head assembly of claim 24 wherein said labyrinth seal includes a plurality of apertures formed axially therethrough for respective fastening members adjustably connecting said labyrinth seal to said contiguous surface of said lower bearing hub.

26. The drive head assembly of claim 25 wherein the diameter of said apertures exceeds the diameter of said fasteners permitting said labyrinth seal to move in the horizontal plane relative to said contiguous surface of the lower hub for self alignment of said labyrinth seal to said inner surface of said first fluid passageway.

27. The bearing head assembly of claim 26 including an O-ring seal between said labyrinth seal and said contiguous surface of said lower bearing hub for additional sealing therebetween.

28. The drive head assembly of claim 27 wherein said inner surface of said first fluid passageway is defined by one or more of the inner surface of said sleeve, said driven gear, a bearing member rotatably supporting said sleeve or an extension member connected to said sleeve.

29. The drive head assembly of any of claim 1 wherein said prime mover is drivingly connected to said sleeve by gears.

30. The drive head assembly of claim 29 wherein said gears comprise a drive gear mounted for rotation on a drive shaft extending from said prime mover, and a driven gear fixedly connected to said sleeve for transferring rotational torque from said drive gear to said sleeve.

31. The drive head assembly of claim 30 including a housing adapted to support said prime mover and said first and second bearing hubs thereon, and to enclose said drive shaft and said drive and driven gears therein.

32. The drive head assembly of claim 4 including adjustable valve means for controlling the pressure of fluid in said first fluid passageway.

33. The drive head assembly of claim 32 wherein the pressure of fluid in said first fluid passageway is maintained in the range of 50 to 500 psi in excess of wellhead pressure in said second fluid passageway.

34. In a stuffing box for sealing the end of a rotatable rod extending from a well bore, the improvement comprising:

a first fluid passageway disposed concentrically around at least a portion of the rod passing through the stuffing box;

a second fluid passageway disposed concentrically inside said first passageway, said second passageway being in fluid communication with wellhead pressure during normal operations;

means to pressurize fluid in said first passageway to a pressure in excess of wellhead pressure to prevent the leakage of well fluids through said stuffing box.

36. The stuffing box of claim 29 wherein said seal means are disposed in said first passageway between said means to bias and a seal retaining member.

38. The stuffing box of claim 31 further comprising an outer axially disposed tubular sleeve disposed around a tubular standpipe concentrically mounted within said sleeve in annular spaced relation to said sleeve and the rod, the annular space between said sleeve and said standpipe defining said first passageway and the annular space between said standpipe and the rod defining said second fluid passageway.

40. The stuffing box of claim 33 wherein said sleeve has an upper and a lower end, said upper end being adapted for a releasable and tightenable connection to a cap member that closes said upper end around the rod.

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a tubular standpipe concentrically mounted within said sleeve in annularly spaced relation thereto defining a first tubular fluid passageway for receiving fluid at a first pressure and operable to receive a polished rod therein in annularly spaced relation defining a second tubular fluid passageway exposed to oil well pressure during normal operation;

seal means disposed in said first fluid passageway;

means for maintaining the fluid pressure within said first fluid passageway greater than the fluid pressure in said second fluid passageway; and

means for releasably drivingly connecting said sleeve to a polished rod mounted in said standpipe.

42. A drive head as defined in claim 41, further including a centrifugal backspin retarder coupled to said drive shaft for reducing reverse rotation of said sleeve.

43. In a drive head for rotating a rod in a well, the drive head having an upper end and a lower end, the improvement comprising a stuffing box for said rod integrated into the upper end of said drive head to enable said stuffing box to be serviced without removing said drive head from the well.

44. In a drive head as defined in claim 43, further including a fluid pump for pressurizing said stuffing box.

45. In a drive head as defined in claim 44, further including means for maintaining the uphole side of said stuffing box at a higher pressure than the downhole side thereof to prevent leakage of fluid from said well bore.

46. A polished rod lock out clamp for use in securing the polished rod in an oil well installation, comprising:

a clamp body having a bore for receiving a polished rod in spaced relation to said bore;

clamp members in said body for engaging a polished rod in said bore; and

manipulating means secured to said body and said clamp members for moving said clamp members between a polished rod gripping position whereat said clamp members grippingly engage said polished rod to prevent rotation and axial movement thereof and a retracted position whereat said clamp members are removed from said polished rod to permit rotational and axial movement of said polished rod in said bore of said clamp body.

47. A clamp as defined in claim 46, further including means for centering said polished rod in said bore of said body.

48. A clamp as defined in claim 46, each said clamp member being radially movable with respect to said polished rod and having an elongated arcuate inner surface for engaging said polished rod.

49. A clamp as defined in claim 46, each said clamp member being in the form of a piston, said clamp body having a piston bore for each piston, each said piston bore extending radially of said bore of said clamp body, each piston having an inner end proximate said bore of said clamp body, a cylindrical recess in said inner end for receiving and grippingly engaging said polished rod and means for moving said pistons in respective piston bores between said positions of said clamp members.

50. A clamp as defined in claim 49, said clamp members comprising a pair of radially opposed pistons.

51. A clamp as defined in claim 50, said pistons having mutually engageable end faces and seal means disposed between said end faces, said pistons being sealingly disposed in respective piston bores and being sealingly engageable with said polished rod to prevent well fluids from escaping past said clamp when said clamp members are disposed in said clamping position.

52. A clamp as defined in claim 49, the radius of said inner surface being slightly less than the radius of said polished rod to enhance gripping force.

53. A clamp as defined in claim 46, further including means for biasing said clamp members towards said retracted position.

54. A clamp as defined in claim 46, further including means for axially locating said clamp members in said clamp body and for transferring axial and rotational loads from said clamp members to said clamp body.

55. A clamp as defined in claim 46, said manipulating means including a bolt threaded into said clamp body.

56. A clamp as defined in claim 46, said clamp being arranged to be secured between a polished rod drive head and a flow tee of an oil well installation.

57. A clamp as defined in claim 46, said clamp forming part of a drive head for driving said polished rod.

58. A polished rod lock out clamp for use in securing the polished rod in an oil well installation, comprising:

a clamp body having a bore for receiving a polished rod in spaced relation;

clamp members in said body for engaging a polished rod in said bore, each said clamp member being radially movable with respect to said polished rod and having an elongated arcuate inner surface for matingly receiving and engaging said polished rod;

manipulating means secured to said body and said clamp members for moving said clamp members between a polished rod gripping position whereat said clamp members grippingly engage said polished rod to prevent rotation and axial movement thereof and a retracted position whereat said clamp members are removed from said polished rod to permit rotational and axial movement of said polished rod in said bore of said clamp body; and

means for biasing said clamp members towards said retracted position.

59. A clamp as defined in claim 58, said clamp body further having piston bores extending radially of said bore of said clamp body, each said clamp member comprising a piston disposed in a piston bore, each piston having an inner end and an elongated recess in said inner end for receiving and grippingly engaging said polished rod.

60. A clamp as defined in claim 59, said manipulating means including a bolt secured to each said pistons, said bolts being threadedly engaged with radially extending threaded holes in said clamp body for radial movement of said bolts and said pistons, said bolts extending outwardly of said clamp body for manipulation thereof.

61. A clamp as defined in claim 58, said clamp members including a pair of opposed clamp members each forming an elongated segment of a cylinder having said arcuate inner surface for engagement with a polished rod and an arcuate outer surface for engagement with said bore of said clamp body.

62. A clamp as defined in claim 61, each said clamp body having a longitudinally extending dovetail slot, said manipulating means including a bolt associated with each said clamp members, said bolts being threadedly engaged with radially extending threaded holes in said clamp body for radial movement, a dovetail key formed on inner ends of said bolts for mating engagement with said dovetail slots for securing said bolts and associated clamp members, said bolts extending outwardly of said clamp body for manipulation thereof.

63. A clamp as defined in claim 58, wherein the radius of said inner arcuate surface being slightly less than the radius of the outer surface of said polished rod.

64. A combined blow out preventer and polished rod lock out clamp for use in an oil well installation, comprising:

a housing having a bore for receiving a polished rod in spaced relation and opposed bores extending radially of said polished rod bore of said housing;

clamp members in said housing for grippingly engaging said polished rod in said polished rod bore, each said clamp member comprising a metallic piston disposed in one of said radial bores, each piston having an inner end and an elongated recess in said inner end for receiving and grippingly engaging said polished rod and an elastomeric liner to provide a seal between said clamp member and its associated bore and a seal between said clamp member and said polished rod to prevent well fluid from coming up a well bore of said installation and escaping to the exterior of said well bore when said installation is being serviced; and

manipulating means secured to said housing and said clamp members for moving said clamp members between a polished rod gripping position whereat said clamp members grippingly engage said polished rod to prevent rotation and axial movement thereof and a retracted position whereat said clamp members are removed from said polished rod to permit rotational and axial movement of said polished rod in said bore of said clamp housing; and means for biasing said clamp members towards said retracted position.

65. A clamp as defined in claim 64, said manipulating means including a bolt secured to each said pistons, said bolts being threadedly engaged with radially extending threaded holes in said clamp body for radial movement of said bolts and said pistons, said bolts extending outwardly of said clamp body for manipulation thereof.